Z-14

File Test Section The Infantry Board

SECRET

REPORT

of

The Infantry Board

No. 1546

ROCKET 2.36", W.P. T26

FORT BENNING, GEORGIA

15 December 1943

24725—Benning, Ga., 9-16-42—2,000

SECRET

DECLASSIFIED
Authority NND 963503

IB-471.6

15 December 1943.

Subject: Rocket 2.36", W.P. T26 - Test.

To: The Chief, Ground Requirements Section,
Army Ground Forces, Army War College,
Washington, D. C.

1. Authority and Purpose:

a. Tests of the Rocket, 2.36", W.P. T26, covered in detail in the within Report of Test were conducted in accordance with 3rd Indorsement, Ground Requirements Section, dated 7 December, 1943, GNR/T-11/60729, Subject: WP Rocket, 2.36", for Test by Infantry Board. (Appendix "D".) Tests were actually completed prior to the receipt of the directive. Only twenty-five (25) samples were available, and the tests were therefore limited in scope.

b. The tests were designed to determine:

(1) Whether the ballistics of the subject rocket conforms to the Rocket, 2.36", H.E., M6A1,

(2) Whether the fuze is sufficiently sensitive to assure functioning under normal use,

(3) Adequacy of the subject rocket as a smoke munition and for casualty production,

(4) General suitability and usefulness for Infantry purposes,

(5) Recommended basis of issue.

2. Description of Material: The subject rocket is essentially identical with the standard Rocket 2.36", H.E., M6A1, but with the H.E. body replaced by a cannister filled with W.P. generally cylindrical in shape but with an ogive tapering to a rounded nose. Its overall length is about 3-1/2 inches less than the M6A1. The weights of the two rockets are substantially identical. (Report of Test Par. 1 a, Plate 1.)

3. Factual Background: Army Ground Forces (Infantry) have long been on record as desiring that each type of H.E. projectile for the curved trajectory weapons of the Infantry be matched by one loaded with white phosphorus and with as nearly identical ballistics as possible.

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This is for the purpose of taking advantage of the superior ability of white phosphorus to inflict casualties upon personnel in fox-holes and trenches due to the curved trajectory of the burning particles, and to furnish a convenient and readily available incendiary and screening agent for the use of forward Infantry elements. This principle has been adopted in the case of the 81mm mortar, and a W.P. loaded shell for the 60mm mortar has been developed and tested and found effective. The relative precision with which the 2.36" rocket can be launched at the shorter ranges appeared to promise a particularly useful field of tactical employment for white phosphorus in that weapon.

4. Facts Shown by the Tests: The results of these tests indicate:

a. That the ballistic characteristics and trajectory of the subject W.P. rocket are substantially identical with those of the standard Rocket 2.36", H.E., M6A1. (Slightly greater dispersion in range when fired with near maximum elevation is probably attributable to slight differences in the weight of individual test rockets.) (Report of Test, par. 1 b; Appendix "B" and "C".)

b. The smoke-screen produced by the subject rocket hugs the ground and persists better than that from any smoke projectile of comparable bulk and weight known to The Infantry Board. (Report of Test, pars. 1 d and e; Plates 6, 7, 8, 9, 10 and 11.)

c. The casualty-producing effect of the subject W.P. rocket against personnel in fox-holes is greatly superior to that of the rocket 2.36", H.E., M6A1, and its casualty and morale effect against personnel in the open is excellent. (Report of Test, par. 1 c; Appendix "B" and "C".)

d. The fuze of the subject W.P. rocket functions satisfactorily at the usual angles of incidence and on both firm and comparatively soft ground. (The small number of rockets available for test prevented impact-tests on water, loose sand or soft mud.) It is greatly superior in this respect to the Rocket, 2.36", H.E., M6A1 (Report of Test, par. 1g.)

e. The bursting-charge of the subject W.P. rocket appears to be of the proper strength for maximum screening effect and very satisfactory for casualty effect. (Report of Test, Par. 1 g; Plates 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25.)

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f. The subject W.P. Rocket is extremely effective against apertures of pill-boxes and bunkers, as a means of neutralizing occupants. (Report of Test, Par. 1 g; Plates 13-25, inclusive.)

g. The subject W.P. Rocket can be used with the same firing tables as the Rocket 2.36", H.E., M6A1. (Report of Test, Pars. 1 b and f; Appendix "B" and "C".)

5. Discussion: This munition appears to represent an extremely fortunate combination of screening, incendiary and casualty producing properties against hostile personnel, both in the open and when dug in. The relatively gentle bursting charge avoids the tendency to atomization and quick burning encountered in many other W.P. loaded shell with the resulting tendency of the smoke to "pillar" and dissipate. This makes it an unusually effective screening agent within its range. The same characteristic, combined with its relative accuracy at the shorter ranges and its sensitive fuze makes it exceptionally effective in the hands of Infantry against heavily constructed pill-boxes and bunkers, because, when projected at the apertures, practically the entire charge of burning chemical is carried forward by its momentum through the aperture and into the interior where it is almost certain to produce devastating effects upon personnel. It appears, for such uses, to produce substantially the same effect as a flame thrower without the necessity for using personnel to expose themselves at very short ranges. It may well be found to be a revolutionary weapon in the reduction of such emplacements.

6. Conclusions: The Infantry Board concludes:

a. That the Rocket, 2.36", W.P., T26, is, within its range, the most effective weapon available to the Infantry against hostile personnel in fox-holes, trenches and pill-boxes.

b. That the subject W.P. rocket is, in its present form, an effective and satisfactory short-range smoke-producing munition and incendiary.

c. That the subject W.P. rocket is a desirable and valuable complement to the standard Rocket, 2.36", H.E., M6A1, for Infantry use.

7. Recommendations. The Infantry Board recommends:

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a. That the subject Rocket, 2.36", W.P., T26, be adopted as standard and placed in production without essential modification.

b. That the subject rocket be issued to Infantry on an initial basis of three (3) for each 2.36" rocket launcher, with a basis of supply equal to fifty percent, (50%) of that of the standard Rocket, 2.36", H.E., M6A1.

c. That instructional literature for its employment in accordance with the above be packed with the subject W.P. rocket for issue to troops.

d. That priority be given to the issue of the subject W.P. rocket to combat elements in the Pacific areas.

e. That The Infantry Board be furnished, as soon as practicable, with a sufficient supply of the subject rocket to complete its tests on ballistics, tactical effectiveness and technique of employment.

For the President:

INGOMAR M. OSETH,
Colonel, Infantry,
Director.

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REPORT of TEST

ROCKET 2.36", W.P., T26

TEST SECTION
THE INFANTRY BOARD
FORT BENNING, GEORGIA

Submitted to
THE INFANTRY BOARD

Copy No. 6 **Date** 7 Dec 1943.

1659 BENNING 8-16-43 1,000

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TEST SECTION

7 Dec 1943.

MEMORANDUM TO: Director, The Infantry Board,
Fort Benning, Georgia.

1. In compliance with instructions contained in basic letter, the following information is submitted:

a. Characteristics: The W.P. Rocket, T26, weighs 3.50 lbs as does the M6A1. The T26 is 17-1/4 inches long as against 21.6 inches for the M6A1. The motor tube and tail assembly are similar to those of the M6A1. The T26 Rocket head weighs 1.68 lbs. Plate I shows a T26 Rocket.

b. Long Range Dispersion: Using a machine rest, five (5) T26 rockets were fired at a range of 635 yards (center of impact area). The T26 rockets formed a pattern 80 yards long by 30 yards wide. The M6A1 fired at the same elevation fell in a pattern 22 yards long by 14 yards wide. The center of the W.P. group was 22 yards beyond the center of the M6A1 group.

c. Fragmentation Effect: The impact area used for the above long range firing was 100 yards square. In this square were 11 rows of foxholes, each row containing 11 foxholes, a total of 121 foxholes. These foxholes were 2 feet by 3 feet by 2 feet deep with silhouette targets laid across the bottom. Between these foxholes were three-dimension vertical kneeling silhouettes, each silhouette midway between the adjacent foxholes (See Appendix "A"). The five (5) H.E. rocket fragments hit two (2) foxholes, each one once, and 13 vertical targets a total of 71 times. The five (5) T26 white phosphorous hit 13 foxholes for a total of 154 hits and 12 vertical targets, for a total of 66 hits with one target destroyed (See Plate 2) (For charts of hits of H.E. see Appendix "B") (Appendix "C" shows T26 hits).

d. Screening Effect: The five (5) T26 Rockets fired at high angle (700 mils) formed an effective smoke screen which lasted for 14 minutes after the fifth rocket landed. This munition instead of violently bursting and scattering all of the W.P. in small particles, bursts only

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enough to throw its contents a short distance, but in large pieces. Thus, instead of a huge short-lived pillar of smoke (See Plates II to V) such as the 60mm W.P., the T26 produces a low long-lasting screen (See Plates VI to XI). Of the five (5) W.P. Rockets fired at this high angle, one lasted 18 minutes, giving a satisfactory screen all the while.

e. Comparison with 60mm Smoke: Qualified observers, i.e. members of the Infantry Board and the Chemical Warfare Section of the Infantry School, all agreed that the screening effect of the T26 is superior to that of the 60mm W.P. It was felt that as a screening agent the T26 is more comparable to the 60mm H.C. Shell than to the 60mm W.P. Shell. Because of its mild bursting effect the dispersion of the W.P. in the T26 rocket is less than that of the 60mm W.P., but the concentration is greater. Appendix "B" shows area of hits and Plate XII shows silhouette which is shown in blue on Appendix "B".

f. Dispersion at Short Range: Comparative flat trajectory firing was conducted from 100 yards, using a machine rest to fire 5 H.E. and 5 T26 Rockets. The shot group with each type of rocket was within a twenty inch square which had a 6" x 18" rectangle as its center. (This was the aperture of a dirt pillbox)

g. Sensitivity and Casualty Effect: All five of the T26 Rockets exploded regardless of the soft dirt or the angle at which they hit. One T26 went through the aperture, filling the pillbox with smoke to such an extent that a man wearing a gas mask and using a miner's lamp could not find his way around the interior until twenty minutes after the rocket burst. Plates XIII through XVV show the effects of this firing. At this comparatively flat angle and high velocity, the forward speed of the rocket added to the force of explosion, causes greater distribution of the W.P. (See Plates XIV and XV). Of the five (5) H.E. Rockets fired at the pillbox aperture from 100 yards, three (3) failed to explode. One of these buried itself in the soft dirt next to the aperture, one went through the aperture, and one ricocheted from the soft earth in front of the aperture.

2. It is the opinion of the Test Officer that the T26 Rocket is an excellent short range screening agent, and

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also a superior casualty producing agent against enemy dug in without overhead cover; and that is a very effective munition for use against pillbox apertures. It is further felt, that the sensitivity and ballistics of the T26 Rocket, as compared to the M6A1 Rocket, are such as to warrant its adoption without further modification.

KENNETH D. SHELDON,
1st Lt., Infantry,
Test Officer.

I concur in the above report:

WILLIAM C. RUTHERFORD,
Lt. Colonel, Infantry,
Chief of Test Section

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IB-471.6

26 November 1943

SUBJECT: Rocket 2.36", H.E., T26.

TO: Chief, Test Section, The Infantry Board.

1. A very small supply of the subject rockets having been received, it is requested that limited tests be conducted to determine the following:

a. What is the comparative accuracy, sensitivity and dispersion of the subject rockets and H.E. rockets when fired at a pill box aperture from 100 yards? (Fire 5 rounds of each from a machine rest.)

b. What is the maximum range and dispersion at maximum range of subject rockets and H.E. rockets when fired at an angle of elevation of 40°? (Fire 5 rounds of each from a machine rest.)

c. What is the average burning time of the subject rocket after impact? (Taken from b, above.)

d. How does a smoke cloud formed by fire of the subject rockets compare with that formed by five T6 W.P. 60mm shells? (Fire five of each at fast rate at the maximum range of the subject rocket at 40°.)

e. How does the dispersion of the subject rocket compare with that of the T6 W.P. 60mm smoke shell? (Taken from d, above.)

f. What is the casualty effect of subject rocket as compared to the T6 W.P. shell? (Place dummies in foxholes at the point where it is expected to form the smoke cloud in d, above.)

g. What are the physical characteristics of the subject rocket?

h. Is there any other pertinent data obtainable from the limited firing prescribed above?

2. Colonel Charles H. Coates is the Board member charged with this project which is assigned Priority "A". Report of Test will be submitted by 5 December 1943.

For the Director:

REID BLAIR,
Lt. Col., Infantry,
Recorder.

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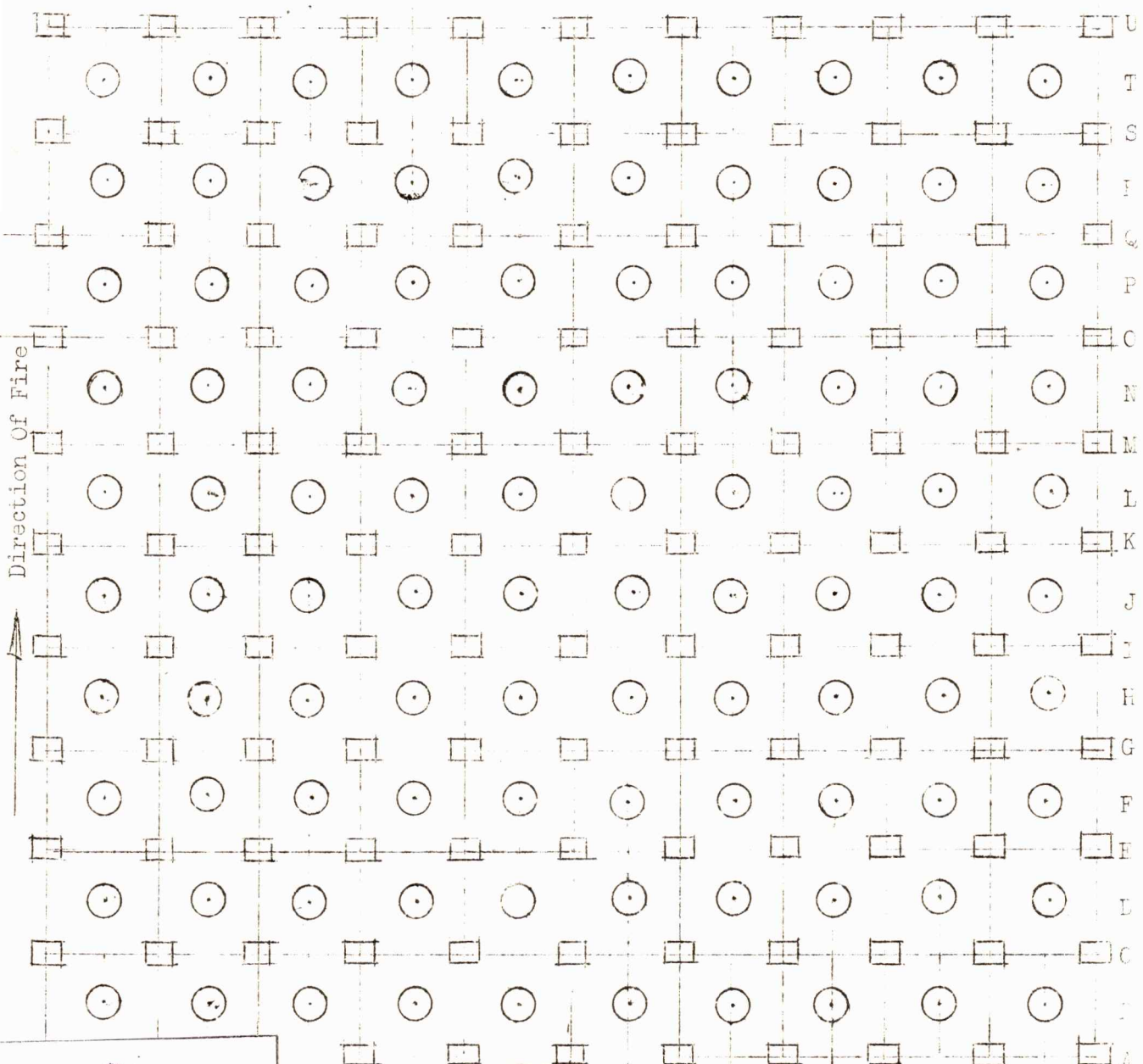
Date: Shot No.: Fuze: Type burst:

No. Foxholes hit: No. Silhouette[illegible]it:

Remarks:

X = point of burst; ▭ = Foxhole ◯ = Kneeling silhouette

Each square 10 yards by 10 yards



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Date: Shot No.: Fuze: Type burst:

No. Foxholes hit: No. Silhouette. it:

Remarks:

5 Shots with T86 W.P.
Rocket

No. Foxholes hit: 13 No Silhouettes hit: 13

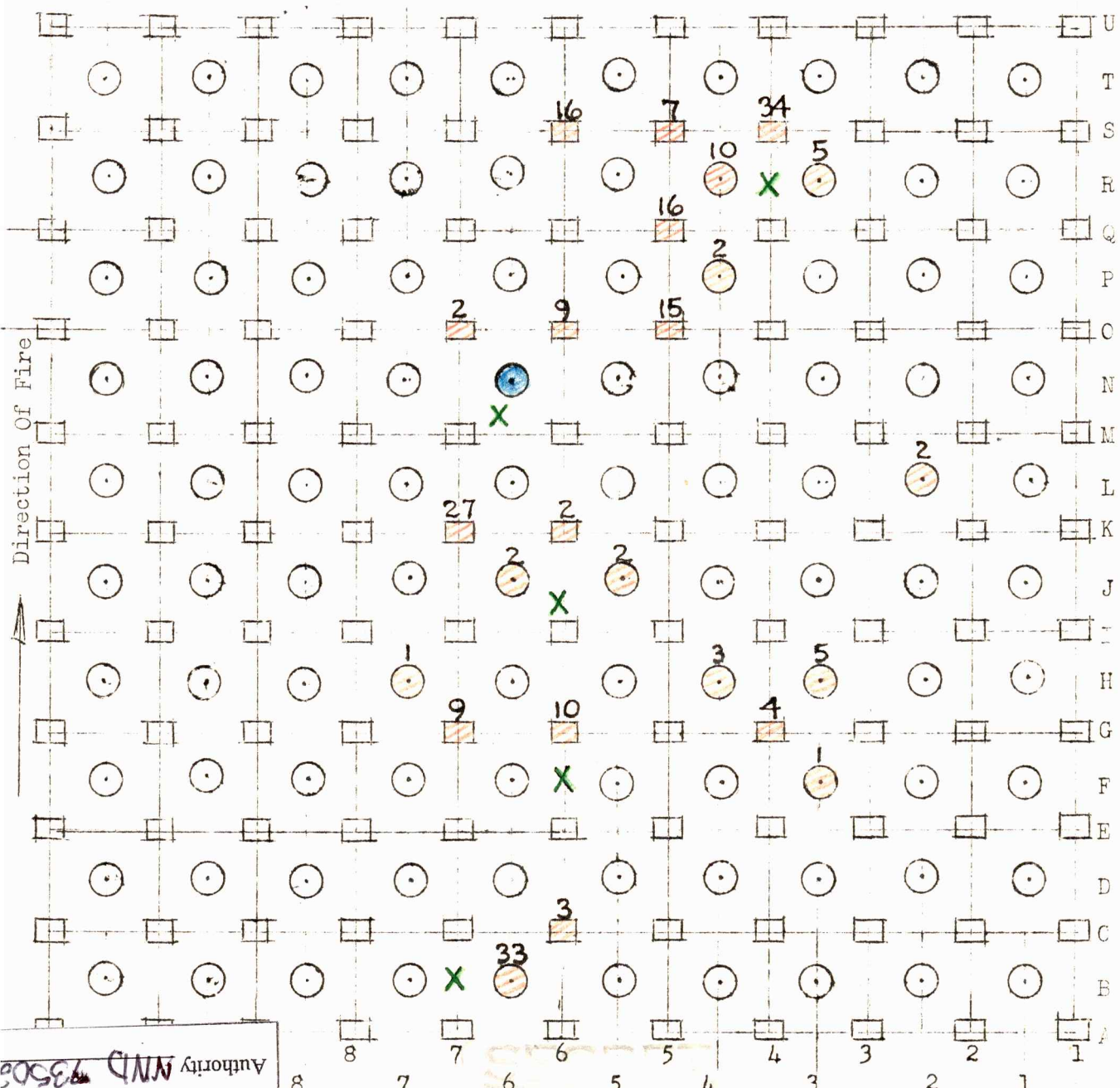
High angle 700 mils
Range 635 yards

Hits in foxholes: 154 Hits in Silhouettes: 66

Silhouettes in blue destroyed

X = point of burst; ☐ = Foxhole ◯ = Kneeling silhouette

Each square 10 yards by 10 yards



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Date: Shot No.: Fuze: Type burst:

No. Foxholes hit: No. Silhouettes hit:

Remarks:

5 Shots with M6A1 Rockets

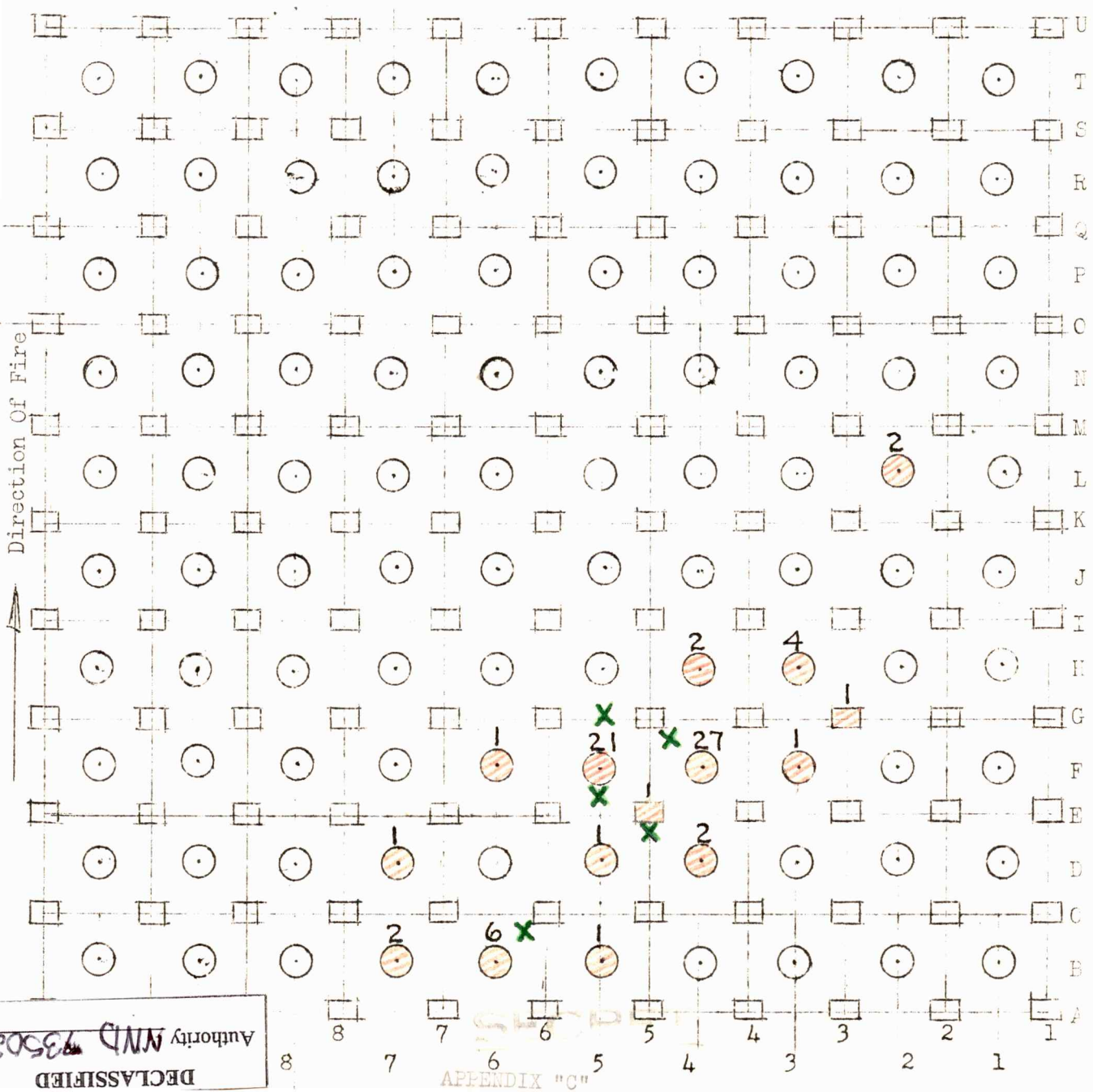
No. Foxholes hit: 2 No. Silhouettes hit: 13

High angle 700 mils
Range 650 yards

No. Hits in Foxholes: 2 No. Hits on Silhouettes: 71

X = point of burst; ▭ = Foxhole ◯ = Kneeling silhouette

Each square 10 yards by 10 yards



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SUBJECT: WP Rocket, 2.36" for Test by Infantry Board.

SPRMD 471.94 (30 Oct 43) 2nd Indorsement EMT/jbr
7.2766

Headquarters, Army Service Forces, Washington, D. C.
13 November 1943

TO: Commanding General, Army Ground Forces.

Noted in Requirements Division and forwarded, inviting attention to the 1st Indorsement.

For the Commanding General:

/t/ LEM A. DENSON, JR.,
Colonel, General Staff Corps,
Director, Requirements Division.

/s/ E. M. THOMAS, Major, JAGD

for

R. M. OSBORNE
Colonel, General Staff Corps
Chief, Development Branch.

471.94 (S) (30 Oct 43) 3d Ind.
GNMCT-11/60729
7 December 1943.
GROUND RE UIREM NTS SECTION, HQ., Army Ground Forces, Washington, D.C.
17 Dec 1943

To: President, Infantry Board, Fort Benning, Georgia.

1. Attention is directed to 1st Indorsement.

2. There has been shipped to the Infantry Board twenty-five (25) 2.36 inch WP Rocket Grenades for test.

3. Upon receipt of the subject rockets, service tests are to be conducted to determine:

a. If the quantity of White Phosphorus contained in the projectile is sufficiently effective to warrant the adoption of another type of munition for the Rocket Launcher.

b. Whether or not the fuze is sufficiently sensitive to produce detonation at all times.

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c. If the range tables for the M7A1 are applicable to the WP projectile.

d. Suitability for Infantry use.

e. Basis of issue.

f. Any other facts upon which to base your recommendations.

4. This project to be assigned an "A" priority and report to be submitted to this Headquarters twenty (20) days after receipt of material.

For the Chief, Ground Requirements Section:

/s/ GEARY F. LENEY,
Lt. Col., G.S.C.,
Assistant Executive
Ground Requirements Section.

C O P Y

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O.O. 471.94/1619 (s)
Attn: SPOTU
SPAMD 471.94 1st Ind. Uhl/lb
6427

Army Service Forces, Ordnance Office, Washington 25, D. C.,
8 November 1943.

To: Headquarters, Army Service Forces, Washington, D. C.
ATTN: Requirements Division.

1. Twenty-five T26 WP rockets will be sent by express 8 November 1943.

2. This shipment has been delayed because projectiles were not currently available at Delaware Ordnance Depot.

For the Chief of Ordnance:

/s/ L. U. BAILEY
/t/ L. U. BAILEY
Major, Ord. Dept.
Assistant.

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WAR DEPARTMENT
SPAMD 471.94 HEADQUARTERS ARMY SERVICE FORCES EMT/amb
WASHINGTON 72766

Subject: HP Rocket, 2.36" for Test by Infantry Board.

To: Chief of Ordnance
Attention: Technical Division, Rocket Branch.

1. Confirming informal arrangements made between Major Thomas of this Headquarters and Captain Uhl of the Ordnance Department at the request of the Commanding General, Army Ground Forces, it is desired that twenty-five of the HP Rockets, 2.36" being assembled for SWPA be sent immediately to the Infantry Board for test.

2. It is requested that this office be advised of date of shipment. The remainder of rockets for the test boards, as requested in previous communication from this office, will be furnished when urgent overseas requirements totaling 15000 rounds have been satisfied.

For the Commanding General:

/t/ HOWARD BRUCE
Acting Director of Materiel

/s/ R. M. CORNUKE
Colonel, General Staff Corps
Chief, Development Branch.

C O P Y

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APPENDIX "D"

M6A1 and T-26 to show comparative size.

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60-mm WP shell on impact.

NOTE: This shell was fired immediately after the T-26 rockets were fired to have same wind and weather conditions.

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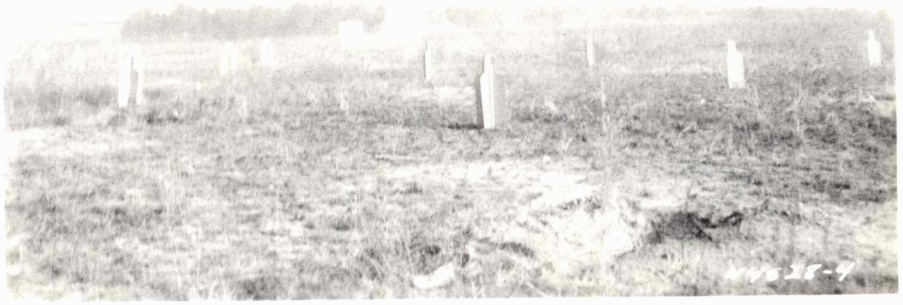

Same as Plate 2, 30 seconds later.

NOTE: Smoke rising in pillar.

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One minute after impact, pillar of smoke still rising.

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Authority NND 73

2 Minutes after impact, little screening effect, smoke has risen above target area.

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First rocket has just burst in target area.

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Fifth, and last, rocket has just burst in impact area. Individual smoke clouds can be seen.

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30 Seconds after impact of last rocket. There are eight rows of targets not visible.

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45 Seconds, clouds are almost completely filled in.

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Authority NND 73502

1 Minute, screen is across entire area.

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Authority NND 73

2 Minutes, screen is still effective.

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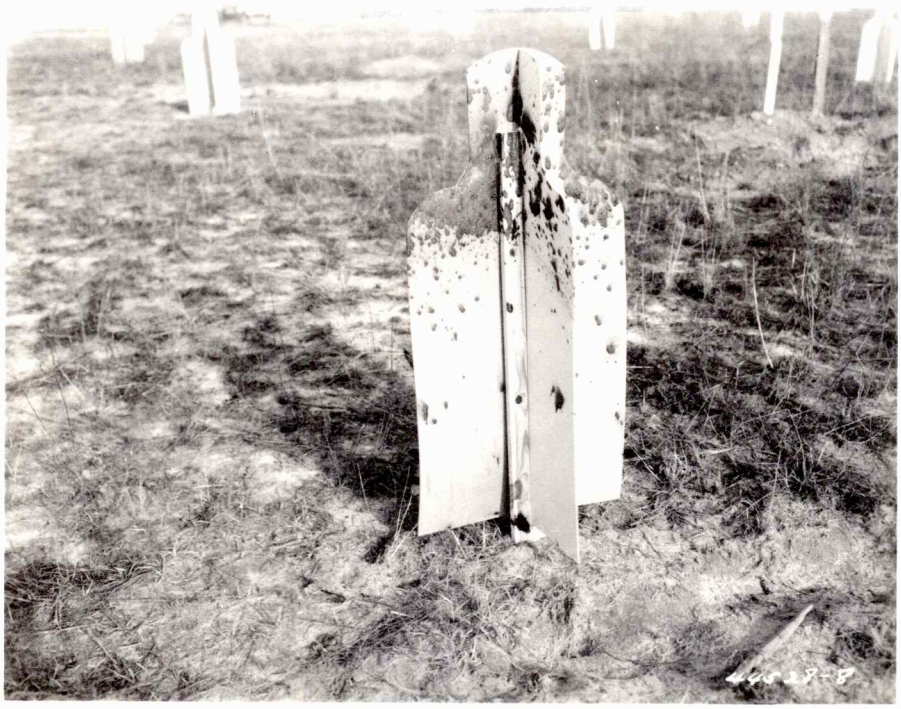
Authority NND 735



Silhouette which is shown in blue on chart #2. This target was splashed with W.P. so that no attempt was made to count individual hits.

PLATE 12

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Rocket burst on soft earth above aperture. (Range 100 yards.)

NOTE: M6A1 failed to explode in this dirt.

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W.P. rocket bursting on ground in front of aperture.

NOTE: 4"6Al which hit here ricocheted without exploding.

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W.P. rocket bursting in soft dirt in front of aperture.

NOTE: Entire pill-box is screened.

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W.P. rocket h s just burst in pill-box, smoke is starting out of aperture.

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30 Seconds after rocket went in aperture smoke is pouring from front and rear.

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Smoke coming out of rear entrance after 45 seconds.

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Side view of smoking entrance.

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Front of pill-box 5 minutes after entrance of rocket.

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Same as Plate 20 after 10 minutes.

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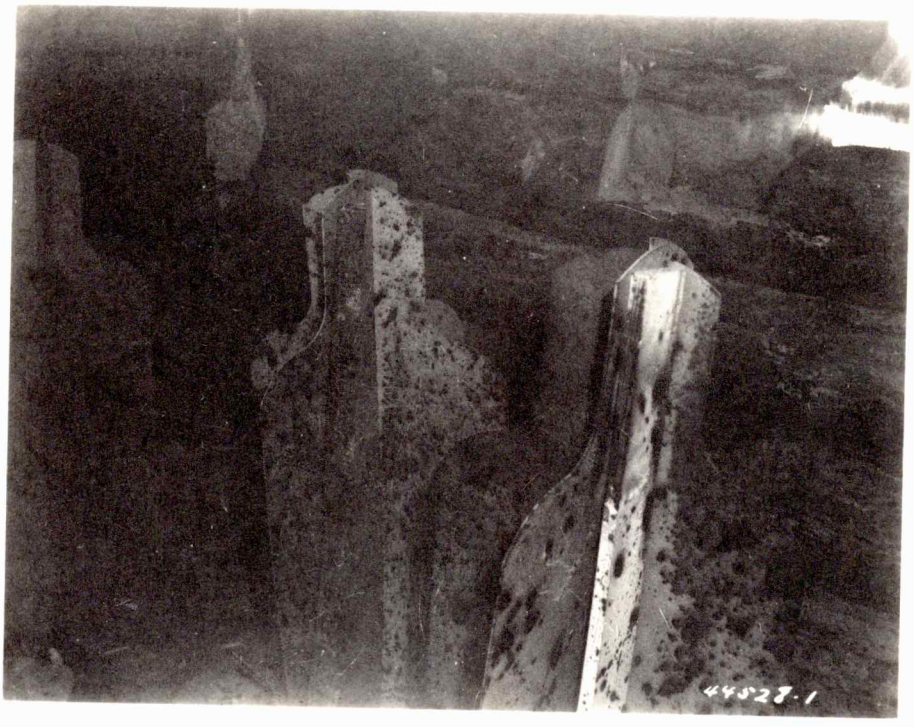

Silhouettes inside pill-box which is shown in preceding pictures.

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Another view of pill-box interior.

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Floor of same pill-box. All damage caused by same rocket.

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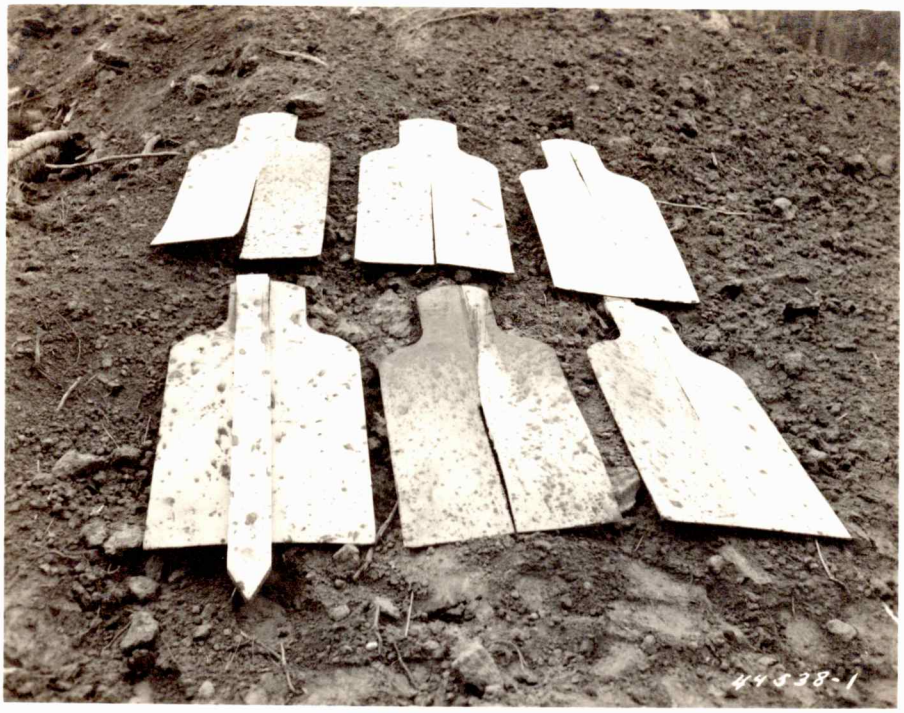

These are silhouettes which were standing in pill-box to represent the gun crew.

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